UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,304	07/23/2001	Patrick J. McLampy	050115-1070	3506

24504	7590	08/15/2005

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948

EXAMINER
CHO, HONG SOL

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/911,304	MELAMPY ET AL.
	Examiner	Art Unit	
	Hong Cho	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on <u>23 May 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,5-12,15,19-26 and 43-63</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,5,7-12,15,19,21-26,43-47,49,52,54-58 and 60-63</u> is/are rejected.

7)☒ Claim(s) <u>6,20,48,53 and 59</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>23 May 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   This office action is in response to the amendment filed on 5/23/2005. Claims 2-

4, 13, 14, 16-18, and 27-42 have been cancelled. Claims 1, 5-12, 15, 19-26, and

43-63 are pending in the instant application.

Claim Objections

2.   Claims 20 and 25 are objected to because they depend on the cancelled claim 14.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e)

that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by
the applicant for patent, except that an international application filed under the treaty defined in
section 351(a) shall have the effects for purposes of this subsection of an application filed in the
United States only if the international application designated the United States and was published
under Article 21(2) of such treaty in the English language.

4.   Claims 1, 5, 9-12, 15, 19, 23-26, 43, and 44 are rejected under 35 U.S.C. 102(e) as

being anticipated by Ma et al. (US Patent Number: 6,775,280), hereinafter

referred to as Ma.

        Re claim 1, Ma teaches a router network 20 (Figure 1; col. 5, lines 7-10),

which can carry video packet (col. 9, lines 34-35; *A method for providing rapid

rerouting of real-time multi-media data flows*), comprising the steps of: device 22

receiving data packets (Figure 1; col. 5, lines 49-56; *receiving a data packet at a*

first endpoint), from Nodes C, F, A, B or E (Figure 1; col. 5, lines 56-58; *a second endpoint*), having an assigned QoS, source and destination information (*packets flowing between a first endpoint and a second endpoint, wherein each endpoint comprises a network address and source port*), device scanning the source and destination fields to determine the source and intended destination of the packet (Figure 5, step 102, col. 10, lines 42- 46; *determining a translated source address and a translated destination address for each data packet*), and device 22 selecting a set of compliant paths from all paths extending from the device 22 based on the assigned QoS (*selecting one forwarding destination for each data packet from a plurality of forwarding destination based on flow quality statistics associated with the first flow*), the Policy 52, and the Network Topology Information 72 which includes Hop Data 88 and Propagation Delay Data 90 (Figure 4, figure 5, step 110, col. 10, lines 58-63; *determining a forwarding destination if more than one destination address of said data packet is provided*).

Re claims 5 and 19, Ma teaches that device 22 can receive a video packet (figure 4., col. 9, lines 34-37, *data packet is a real-time protocol data flow packet*).

Re claims 9 and 23, Ma teaches Control Circuit 44 (Figure 2) which scans the source and destination fields to determine the source and intended destination of the packet (Figure 5, step 102, col. 10, lines 42-46, *determining a forwarding destination*) and selects a set of compliant paths from all paths extending from the Device 22 based on the assigned QoS, the Policy 52, and the Network Topology Information 72 which includes Hop Data 88 and Propagation Delay Data 90

(figure 4; figure 5, step 110, col. 10, lines 58-63, *determining and analyzing flow quality statistics for each of said destination addresses)*.

Re claims 10 and 24, Ma teaches at least a portion of the QOS field 60 of the Packet 30 includes, as the QOS Delay 86, a delay bound (a maximum amount of time available for the Packet 30 to reach its intended destination, i.e., Source/Destination 84) (Figure 4, col. 9, 35-39). Ma further teaches the Policy Stage 24 analyzes the Hop data (e.g., available paths to NODE D), the Propagation Delay Data 90 (e.g., the delays through each path or node along each path), and the Policy 52 (e.g., the port corresponding to output port 42-1 requires at least 50% general data packet bandwidth) (Figure 4., col. 9, 40-43, step of performing traffic measurement on said received data packet).

Re claims 11 and 25, Ma teaches the Efficiency Stage 26 selects one of the compliant paths from the set of Compliant Paths on the List 94 based on the Network Efficiency Information 54 (figure 4; col. 9, lines 66-67). The Network Efficiency Information includes the Network Load Information 74 describing network traffic at the output ports, cost, security, delay and bandwidth capacity of the Device 22 (Figure 4, col. 10, Line 1-4, *step of applying QoS characteristics to said packet)*. Ma further teaches that suppose the Load Information 74 indicates that the Network 20 is more congested at output port 42-1 (Figure 1, through which path BD passes) than that at output port 42-2 (Figure 1, through which path CD passes). The Efficiency Stage 26 could then select path CD over path BD in compliance of a network efficiency constraint (Figures 1 & 4., col. 10, lines 9-14,

allows for guaranteed bandwidth for transmission of said data packet within a

data flow).

Re claims 12 and 26, Ma teaches the Device 22 includes a Policy Stage 24

and an Efficiency Stage 26 that enable the deice to provide different QOS to the

host computers, e.g. Node D, by routing data in a manner that satisfies both Qos

policy and network efficiency constraints (Figures 2-4, col. 5, lines 51-56, *step of*

applying QoS characteristics provides for policing and shaping of said data flow).

Re claims 15 and 43, Ma teaches a router network 20 system (Figure 1.,

col. 5, Lines 7-10), which can carry video packet (Col. 9, Lines 34-35, *A method*

for providing rapid rerouting of real-time multi-media data flows), comprising a

Device 22 (Figure 1, col. 5, lines 49-56, *a first end point)*, connected Nodes C, F,

A, B and E (Figure 1, col. 5, lines 56-58, *a second end point)*, having an assigned

QoS, source and destination information *(packets flowing between a first endpoint*

and a second endpoint, wherein each endpoint comprises a network address and

source port), device scanning the source and destination fields to determine the

source and intended destination of the packet (Figure 5, step 102, col. 10, lines

42- 46; *determining a translated source address and a translated destination*

address for each data packet), which further comprises multiple input ports 40-0

to 40-M and output pods 42-0 to 42-N (Figure 2, col. 6, lines 27-29, *a*

transceiver), multi-stage Routing Decision 26, Policy Table 66, Network

Topology Table 68 and Network Efficiency Table 70 (Figure 3, col. 8, lines 1-4,

Software stored within said first endpoint defining functions to be performed by

said first endpoint), and device 22 selecting a set of compliant paths from all

paths extending from the device 22 based on the assigned QoS (*selecting one forwarding destination for each data packet from a plurality of forwarding destination based on flow quality statistics associated with the first flow*), the Policy 52, and the Network Topology Information 72 which includes Hop Data 88 and Propagation Delay Data 90 (Figure 4, figure 5, step 110, col. 10, lines 58-63; *determining a forwarding destination if more than one destination address of said data packet is provided*), and Multi-stage Control Circuit 44 (Figure 2, col. 6, Lines 48-49, *a processor; a controller*) which scans the source and destination fields to determine the source and intended destination of the packet (Figure 5, step 102, col. 10, lines 42-46., *determining a translated source address and a translated destination address for each data packet*) and selects a set of compliant paths from all paths extending from the Device 22 based on the assigned QoS, the Policy 52, and the Network Topology Information 72 which includes Hop Data 88 and Propagation Delay Data 90 (Figure 4, figure 5, step 1 10., col. 10, lines 58-63, *selecting one forwarding for each data packet from a plurality of forwarding destination based on flow quality statistics associated with the first flow*).

Re claim 44, Ma teaches the elements of the Control Circuit 44 are implemented in hardware as actual circuits (CoI. 12, Lines 38-40, *said the controller is located within an application specific integrated circuit*).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 7, 8, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Ma in view of Wilford et al (U.S 6678250), hereinafter referred to as

Wilford.

        Re claims 7, 8, 21, and 22, Ma discloses all of the limitations of the base

claim, but fails to teach removing MPLS tag from data packet if specified by a

flow transform record located within the first endpoint. Wilford discloses

extracting MPLS tag for routing information (column 7, lines 55-62). It would

have been obvious to one having ordinary skill in the art at the time the invention

was made to modify Ma to implement MPLS tag extraction of Wilford to

determine routing information for the packet. Since Ma suggests looking up

network routing table to select compliant path, the motivation to implement is to

check that there are sufficient bytes in the frame to have a valid IP address for

routing packets.

Claims 45 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Ma in view of Grabelsky et al (U.S 6678250), hereinafter referred to as

Grabelsky.

Re claims 45 and 50, Ma discloses all of the limitations of the base claim,

but fails to teach determining if data packet is RTCP data packet and if said data

packet is an RTCP data packet, processing said RTCP data packet to produce flow

quality statistics. Grabelsky discloses monitoring and management of the real-

time networks by using RTCP (column 2, lines 27-33). It would have been

obvious to one having ordinary skill in the art at the time the invention was made

to modify Ma to implement RTCP of Grabelsky in collecting network statistics

related to network performance. Since Ma suggests RTP application of

transmitting video packets, the motivation to implement is to utilize RTCP to

generate and transmit the relevant network performance statistics (column 2, lines

27-38).

Claims 46, 49, 51, 54-56, and 60-63 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Ma in view of Sato et al (U.S 5513345), hereinafter referred to

as Sato.

Re claims 46, 49, 51, and 54, Ma discloses all of the limitations of the

base claim, but fails to teach detecting an interruption or a link failure in a second

flow received from a first one of the forwarding destinations and selecting a

second forwarding destination as the one of forwarding destination responsive to

detecting the interruption. Sato discloses determining alternate routes during

failure in a network of links and nodes (abstract). It would have been obvious to

one having ordinary skill in the art at the time the invention was made to modify

Ma to implement dynamic routing function of Sato in determining alternate routes

during failure in a network of links and nodes. Since Ma's multi-stage routing

decision module utilizes network topology information, the motivation is to get

the benefit of using dynamic routing protocols in rerouting a packet in case of

congestion, link or node failure in order that a service disruption would minimally

affect a communication system user.

Re claim 55, Ma teaches a router network 20 (Figure 1; col. 5, lines 7-10),

which can carry video packet (col. 9, lines 34-35; *A method for providing rapid*

rerouting of real-time multi-media data flows), comprising the steps of: device 22

receiving data packets (Figure 1; col. 5, lines 49-56; *receiving a data packet at a*

first media router), from Node A (Figure 1; col. 5, lines 56-58; *a source endpoint*)

destined to Node D (*destination endpoint*), and device 22 selecting a set of

compliant paths from all paths extending from the device 22 based on the

assigned QoS (*selecting one forwarding destination for each data packet from a*

plurality of forwarding destination based on flow quality statistics associated with

the first flow), the Policy 52, and the Network Topology Information 72 which

includes Hop Data 88 and Propagation Delay Data 90 (Figure 4, figure 5, step

110, col. 10, lines 58-63; *determining a forwarding destination if more than one*

destination address of said data packet is provided). Ma fails to disclose detecting

an interruption in a reverse flow from the destination endpoint to the source

endpoint through the first media router. Sato discloses determining alternate

routes during failure in a network of links and nodes (abstract). It would have

been obvious to one having ordinary skill in the art at the time the invention was

made to modify Ma to implement dynamic routing function of Sato in

determining alternate routes during failure in a network of links and nodes. Since

Ma's multi-stage routing decision module utilizes network topology information,

the motivation is to get the benefit of using dynamic routing protocols in rerouting

a packet in case of congestion, link or node failure in order that a service

disruption would minimally affect a communication system user.

Re claim 56, Ma teaches the Device 22 includes a Policy Stage 24 and an

Efficiency Stage 26 that enable the deice to provide different QOS to the host

computers, e.g. Node D, by routing data in a manner that satisfies both Qos policy

and network efficiency constraints (Figures 2-4, col. 5, lines 51-56, *updating flow*

quality statistics associated with the forward flow).

Re claim 60, Ma teaches that device 22 can receive a video packet (figure

4., col. 9, lines 34-37, *data packet is a real-time protocol data flow packet*).

Re claim 61, Ma teaches at least a portion of the QOS field 60 of the

Packet 30 includes, as the QOS Delay 86, a delay bound (a maximum amount of

time available for the Packet 30 to reach its intended destination, i.e.,

Source/Destination 84) (Figure 4, col. 9, 35-39). Ma further teaches the Policy

Stage 24 analyzes the Hop data (e.g., available paths to NODE D), the

Propagation Delay Data 90 (e.g., the delays through each path or node along each

path), and the Policy 52 (e.g., the port corresponding to output port 42-1 requires

at least 50% general data packet bandwidth) (Figure 4., col. 9, 40-43, step of

performing traffic measurement on said received data packet).

Re claim 62, Ma teaches the Efficiency Stage 26 selects one of the

compliant paths from the set of Compliant Paths on the List 94 based on the

Network Efficiency Information 54 (figure 4; col. 9, lines 66-67). The Network

Efficiency Information includes the Network Load Information 74 describing

network traffic at the output ports, cost, security, delay and bandwidth capacity of

the Device 22 (Figure 4, col. 10, Line 1-4, *step of applying QoS characteristics to*

said packet). Ma further teaches that suppose the Load Information 74 indicates

that the Network 20 is more congested at output port 42-1 (Figure 1, through

which path BD passes) than that at output port 42-2 (Figure 1, through which path

CD passes). The Efficiency Stage 26 could then select path CD over path BD in

compliance of a network efficiency constraint (Figures 1 & 4., col. 10, lines 9-14,

allows for guaranteed bandwidth for transmission of said data packet within a

data flow).

Re claim 63, Ma teaches the Device 22 includes a Policy Stage 24 and an

Efficiency Stage 26 that enable the deice to provide different QOS to the host

computers, e.g. Node D, by routing data in a manner that satisfies both Qos policy

and network efficiency constraints (Figures 2-4, col. 5, lines 51-56, *step of*

applying QoS characteristics provides for policing and shaping of said data flow).

Claims 47, 52, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Ma in view of Sato and further in view of Shah et al (US 6404733),

hereinafter referred to as Shah.

Re claims 47, 52, and 58, Ma discloses all of the limitations of the base

claim, but fails to teach starting a guard timer on receipt of a next packet in the

second flow and detecting an interruption in the second flow responsive to

expiration of the guard timer. Shah discloses determining a link failure upon the

expiration of timer (abstract). It would have been obvious to one having ordinary

skill in the art at the time the invention was made to modify Ma to implement a

timer of Shah in determining a link failure. Since Ma's multi-stage routing

decision module utilizes network topology information, the motivation is to avoid

route looping by updating network topology table too soon.

Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma in

view of Sato and further in view of Grabelsky.

Re claim 57, Ma and Sato disclose all of the limitations of the base claim,

but fail to teach determining if data packet is RTCP data packet and if said data

packet is an RTCP data packet, processing said RTCP data packet to produce flow

quality statistics. Grabelsky discloses monitoring and management of the real-

time networks by using RTCP (column 2, lines 27-33). It would have been

obvious to one having ordinary skill in the art at the time the invention was made

to modify Ma to implement RTCP of Grabelsky in collecting network statistics

related to network performance. Since Ma suggests RTP application of

transmitting video packets, the motivation to implement is to utilize RTCP to

generate and transmit the relevant network performance statistics (column 2, lines

27-38).

Allowable Subject Matter

7.   Claims 6, 20, 48, 53, and 59 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims.

Response to Arguments

8.   Applicant's arguments filed 5/23/2005 have been fully considered but they are not

persuasive.

On page 15 lines Applicant argues that Ma does not disclose selecting one

forwarding destination for each packet from a plurality of forwarding destinations

when more than one path to the translated destination address are available,

wherein selecting is based on flow quality statistics. The Examiner respectfully

disagrees. Ma discloses per-packet routing in figure 5. In step 102, the device

obtains a packet. In step 104, the device determines whether the packet belongs

to the best effort class. In step 110, the device selects a set of compliant paths

from all paths extending from the device based on the assigned QoS, the policy,

and network topology information. Therefore, the Examiner concludes that the

rejection of claims is proper.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed

within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will expire on the date the

advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will

be calculated from the mailing date of the advisory action. In no, however, event

will the statutory period for reply expire later than SIX MONTHS from the

mailing date of this final action.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Hong Cho whose telephone number is 571-272-

3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax

phone number for the organization where this application or proceeding is

assigned is 571-273-3088.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hc
Hong Cho
Patent Examiner
8/11/2005

JOHN PEZZLO
PRIMARY EXAMINER